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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/717,406	11/19/2003	Charles Q. Zhan	120 06741US	7240

128   7590   05/05/2005

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EXAMINER
LE, TOAN M

ART UNIT	PAPER NUMBER
2863	

DATE MAILED: 05/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 February 2005*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *21 and 22* is/are allowed.

6)☒ Claim(s) *1,2,4,5,7-9,11,14-16 and 18* is/are rejected.

7)☒ Claim(s) *3,6,10,12,13,17,19 and 20* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 November 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date *2/14/05*.

4)☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____ .

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1-2, 4-5, 7-9, 11, 14-16, and 18 are rejected under 35 U.S.C. 102(a) as being

anticipated by "Applying MultiResolution Analysis for Processing of Hydraulic Pump Fault

Signal", Wanlu et al. (referred hereafter Wanlu et al.).

Referring to claims 1, 8, and 15, Wanlu et al. disclose a method; apparatus; a computer

program embodied on a computer readable medium and operable to be executed by a processor,

the computer program comprising computer readable program code (Abstract); comprising:

decomposing a signal comprising a plurality of process variable measurements into a

plurality of resolution levels, the process variable measurements associated with operation of a

valve (page 2, 2nd col., lines 19-37; equations 11-17; figure 1);

grouping the resolution levels into a plurality of groups (page 2, 2nd col., lines 19-37;

equations 11-17); and

identifying one or more defect indicators for at least some of the resolution levels using

the groups, the one or more defect indicators associated with a possible defect in the valve (page

4, 1st col., 2nd paragraph and last paragraph to page 4, 2nd col., 1st and last paragraphs; figure 2).

As to claims 2, 9, and 16, Wanlu et al. disclose a method; apparatus; a computer program embodied on a computer readable medium and operable to be executed by a processor, the computer program comprising computer readable program code, wherein:

decomposing the signal comprises performing wavelet decomposition to generate wavelet coefficients at each of the resolution levels (page 2, 2nd col., lines 19-37; page 3, 2nd col., last paragraph; table 1);

grouping the resolution levels comprises grouping the wavelet coefficients into groups (page 2, 2nd col., lines 19-37; equations 11-17); and

identifying the one or more defect indicators comprises performing singularity detection using the groups of wavelet coefficients (page 4, 1st col., 2nd paragraph and last paragraph to page 4, 2nd col., 1st and last paragraphs; figure 2).

Referring to claims 4, 11, and 18, Wanlu et al. disclose a method; apparatus; a computer program embodied on a computer readable medium and operable to be executed by a processor, the computer program comprising computer readable program code, wherein the one or more defect indicators identify one or more jumps in the process variable measurements (page 4, 2nd col., last paragraph; figure 2).

As to claim 5, Wanlu et al. disclose a method, wherein the one or more jumps represent one or more deterministic signal changes where the process variable measurements change by a threshold amount within a given time period (page 4, 2nd col., last paragraph; figure 2).

Referring to claims 7 and 14, Wanlu et al. disclose a method; apparatus; a computer program embodied on a computer readable medium and operable to be executed by a processor, the computer program comprising computer readable program code, wherein grouping the

resolution levels into the plurality of groups comprises grouping the adjacent three resolution levels into groups, the groups forming overlapping groups where at least some of the resolution levels form part of two or more groups (page 2, 2nd col., lines 19-37; equations 11-17; page 4, 2nd col., 1st paragraph; figure 2).

Claims 3, 6, 10, 12-13, 17, 19-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The reason for allowance of the claims 3, 6, 10, 12-13, 17, 19-20 is the inclusion of steps of determining a probability of a valve defect based on the selected resolution level from measurements of a flow rate through the valve and generating a second signal for a valve adjuster.

Wanlu et al. neither teach nor suggest those limitations.

Allowable Subject Matter

Claims 21-22 are allowed.

The reason for allowance for the claims 21-22 is the inclusion of a controller operable to generate output values for adjusting the valve based on the process variable measurements associated with the operation of the valve.

Wanlu et al. neither teach nor suggest this feature.

Remarks:

Response to Arguments

Applicant's arguments filed 2/14/05 have been fully considered but they are not persuasive.

Referring to claims 1, 8, and 15, Applicant argues that ""Wanlu lacks any mention of grouping decomposition layers into multiple groups and then identifying defect indicators using the multiple groups."

Wanlu discloses "According to the multi-resolution analysis [4], there is a set of recurrence decomposition formulas for the signal f(t) as follows, equations 11-17. Where $A_j f(t)$ is the low-frequency approximation of $f(t) \in L^2 (R)$ on the scale 2^j. $D_j f(t)$ is the high-frequency detail of $f(t) \in L^2 (R)$ on the scale 2^j. The coefficient sequence $\{h_n ; n \in Z\}$ is the low-pass filter coefficients corresponding to the scaling function $\phi(t)$. The coefficient sequence $\{g_n ; n \in Z\}$ is the high-pass filter coefficients corresponding to the wavelet function $\psi(t)$. The two coefficient sequences constitute the orthogonal conjugate filters." on page 2, 2nd col., lines 19-37. And "The characteristic frequency of the shoe-loosing fault is equal to the rotational frequency. When we conduct the threshold noise elimination to d1d2d3, the frequency band of the noise elimination is 0.625~5kHz, the ultra-harmonics of the fault characteristic signal loses a little." on page 4, 1st col., 2nd paragraph.

Thus, Wanlu does disclose grouping decomposition layers into multiple groups in the sum of $A_j f(t)$ for low frequency approximation and in the sum of $D_j f(t)$ for high frequency and then identifying defect indicators using the multiple groups.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Toan M Le whose telephone number is (571) 272-2276. The examiner can normally be reached on Monday through Friday from 9:00 A.M. to 5:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for the

organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Toan Le

April 20, 2005

John Barlow
Supervisory Patent Examiner
Technology Center 2800